structure and composition and are used differently within each model. As shown in the examples below, the default inputs in the HAI Model and BCPM for distribution of plant mix differ substantially, leading to similarly varying cost calculations.

Both models differentiate some inputs by density. BCPM also differentiates these inputs by terrain conditions, whereas the HAI Model implements the terrain factors within the algorithms of the Model itself. Although, at first glance, the default input values for buried drops and poles for the HAI Model and BCPM seem similar, when each model's processing of these costs is considered, the results are quite different. The default values for a buried drop are $0.77 and $0.74 per foot for BCPM and the HAI Model, respectively. However, the HAI Model assigns a 50 percent sharing factor to the placement costs ($0.60 per foot) associated with burying a drop, making the effective cost $0.44 per foot.[39] Therefore, although the inputs in the two Models appear to be similar, they do not produce similar investments.

Pole costs are another instance in which the two Models differ. BCPM clearly identifies the costs associated with poles, anchors, and guys, whereas the HAI Model does not. Although the HAI Model supposedly includes the material and placement costs of anchors and guys within the material and placement costs of poles, this is not made clear from the HAI Model documentation. Still another example of the problems of comparing the two Models' inputs is demonstrated by underground or buried excavation and restoration inputs. BCPM's input variables are defined as trench and backfill, rocky trench, backhoe trench, hand dig trench, boring, and cut and restore

[39] This scenario is discussed in more detail in Exhibit 3.

asphalt, concrete or sod. In contrast, the HAI Model defines similar inputs as a combination of a fraction, which defines how often these conditions exist, and a per-foot cost. Because of these differences between the Models, it is impossible to provide comment on what an appropriate input should be without knowing what the input is expected to measure and exactly how the input is used within the selected model.

In order to determine appropriate values for outside plant, the following information is necessary: (1) should placement costs be included with the cost of material or should they be identified separately; (2) do placement costs vary by terrain factors; (3) what terrain conditions are identified; (4) what discrete sizing is assumed for the various inputs; (5) should supply expense be included with the material costs; (6) if miscellaneous materials (*e.g.* anchors and guys for poles) are involved, should they be included in the material price; (7) where should associated installation costs be accounted for; and (8) what assumptions within the model algorithms would affect how the input variable is determined. Thus, although GTE provides some comment below on the HAI and BCPM Model default inputs, GTE urges the Commission to allow another opportunity for comment on input values after the final platform is selected.

As GTE detailed at length in its Comments,[40] the HAI Model input values are result-oriented and fail to reflect real-world conditions. Each new release of the HAI Model has introduced new changes and inputs that reduce costs but are not verified by evidence or documentation. In addition, the HAI Model developers have:

[40] Comments of GTE Service Corporation, CC Docket Nos. 96-45, 97-160 at 2-9 (filed Oct. 17, 1997).

(1) systematically ignored source data which reflected costs and prices that were higher than the values actually used in the Model; (2) afforded significantly greater weight to the lower costs and prices than any of the higher values; and (3) combined data from different sources in a manner that violates standard modeling and engineering practices. In addition, the HAI Model proponents have often been unable to provide support for many of their input values, and in many cases, what documentation has been provided did not support the input values used in the Model.

In its Comments, GTE also demonstrated the problems with the HAI Model developers' empirical studies and showed that "the input values used in the Model would accurately represent the actual costs of materials and installation for a given network only by accident."[41] As detailed in the Network Engineering Consulting study attached as Exhibit 3, when elements of the HAI Model are examined carefully, the input values used in the Model are not supported by the underlying data.

Numerous state commissions have confirmed this analysis. For example, the New Mexico Commission stated that:

> The Commission agrees with GTE that the method used by the AT&T engineering (team) to collect data from vendors was flawed. A questionnaire was sent to vendors asking the cost of installing cable in different soil, bedrock and density conditions. The AT&T questionnaire did not define the terms used in the questionnaire. Therefore, one contractor's estimates could be higher than another due, for example, to a different perception of what constitutes rocky soil. Also, the contractors that responded to the questionnaire could have differing views as to what line or household density

[41] Comments of GTE Service Corporation, CC Docket Nos. 96-45, 97-160 at 9 (filed Oct. 17, 1997).

> bands constitute rural, suburban or urban conditions. The different perception of soil conditions and density may account for some of the variation in the data supplied by vendors.[42]

The Washington Utilities and Transportation Commission made similar findings, noting that the AT&T questionnaire was so vague that it was difficult to determine why the responding vendors bids differed. It also concluded that:

> AT&T/MCI argue that it was appropriate to discard data from vendors whose prices are high. Mr. Fassett [an AT&T witness] testified that, in a competitive bid situation, the contract is awarded to the low bid submission in which the engineering task are well specified. Since the installation conditions in the AT&T questionnaire were not defined, we conclude that it was not appropriate to discard such data. The Hatfield team did not know if the high bids were due to prices that were not sustainable in a competitive marketplace, the hypothesis offered by AT&T witness Fassett, or because the high prices reflected the contractor's perception of installation conditions which differed from the view of other contractors.[43]

Thus, because the HAI Model default input values have no basis in fact and were designed in order to ensure that Model produces understated costs, it is impossible for the Model to provide reasonable estimates of the actual costs of providing universal service. Similarly, as shown in Exhibit 4, the HAI Model also includes incorrect drop lengths, drop wire costs, and terminal costs, further underestimating the actual costs of providing universal service.

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[42] New Mexico State Commission, Findings or Fact, Conclusions of Law and Order, Docket No. 97-35 TC, ¶ 47 (Sept. 19, 1997).

[43] Order of the Washington Utilities and Transportation Commission, Docket Nos. UT-960369, 960370, 960371, ¶¶ 93-94 (May 11, 1998).

In contrast, BCPM inputs account for more of the factors affecting ILECs. The BCPM default inputs are based upon a survey of the average costs of the five ILECs, commonly referred to as the Best of Breed ("BOB") survey. The default switch inputs used in BCPM are the result of a regression analysis using the SCIS output from over 1,700 central office switches. The SCIS runs were performed using actual cost information from BellSouth, Sprint, and US WEST, and the results were used to develop the default switch inputs in BCPM. The use of an industry survey, similar to that used by the BCPM sponsors, is a viable option that should be considered if national default values are used in a proxy model selected by the Commission. However, although BCPM's default values are more accurate than those in the HAI Model, they are still not reflective of the costs that a specific carrier is likely to incur in provisioning a forward-looking network.

In addition to the existing models, the Bureau seeks comment on Dr. David Gabel's analysis of data from the Rural Utilities Service. Although GTE has not had an opportunity to review this lengthy paper thoroughly, GTE believes that the results may have some applicability for carriers that do not have the internal systems necessary to develop input values. However, it is important to note that Dr. Gabel states numerous times that the costs of ILEC engineering have not been factored into his analysis and that these costs must be considered. GTE will provide additional comments on this analysis when it can complete a more detailed study of Dr. Gabel's findings.

VI. THE COMMISSION SHOULD ADOPT A COST RATHER THAN A REVENUE BENCHMARK, BUT NO BENCHMARK SHOULD BE ADOPTED UNTIL THE COST MODEL PLATFORM AND INPUT VALUES HAVE BEEN DETERMINED.

The Bureau has requested comment on what revenues should be included in the benchmark and the level of the benchmark.[44] Since benchmark issues must be decided based on the cost model selected, GTE urges the Commission to refrain from considering these issues until it has completed its cost model proceeding. In response to a Public Notice (DA 98-715) issued on April 15, 1998, GTE advocated that the federal benchmark be characterized as a cost benchmark, not a revenue benchmark.[45] Cost benchmarks would represent levels of local service costs beyond which the Commission would intervene and provide federal funding. However, the federal benchmark should not represent an assumption by the Commission that any specific amount of revenue will be available from rates in a given area to support local service costs. Furthermore, benchmarks should not be selected by calculating either an average cost or an average revenue, since there is no evidence that using an average value in the federal universal service fund calculation will provide a sufficient level of universal service support as required by the Act.

The Commission has urged states to make reasonable efforts to address the need for universal service support and to eliminate implicit support flows.

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[44] Public Notice at 8-9.

[45] Proposal of GTE, CC Docket Nos. 96-45, 97-160, DA 98-715 at 25 (filed Apr. 27, 1998) ("GTE Proposal").

Unfortunately, some states have misinterpreted the Commission's revenue benchmark as a finding that state support for local services is unnecessary as long as ILEC average combined revenues from supported and non-supported services exceeds the federal benchmark level. Thus, many states are ignoring their own statutory obligation to remove the significant implicit support mechanisms that are within virtually all intrastate rates. By characterizing the benchmarks as cost levels, the Commission would clarify that states are responsible for providing universal service support when the cost of local service exceeds the revenues from these same basic services.[46]

A. Access, toll, and discretionary service revenues should not be included in the federal benchmark.

The Bureau requests general comment on the amount of access revenues that should be included in the benchmark.[47] No access, toll, or vertical (*i.e.*, discretionary) services revenue should be included in the federal benchmark. States also should focus exclusively on the revenues derived from supported basic services. Taking the Commission's position to an extreme, inclusion of all regulated service revenues in the aggregate in a federal or state benchmark would never reveal any need for explicit support as long as the ILEC has overall revenue sufficiency today. While the historical objective has been to assure revenue sufficiency for the ILEC as a whole, this approach is inconsistent with a competitive market.[48]

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[46] GTE Proposal at 26.

[47] Public Notice at 8-9.

[48] Federal-State Joint Board on Universal Service, 12 FCC Rcd 8776, 8786 (Report and (Continued...)

To ensure that universal service is maintained in a manner that fosters competition, the universal service programs must provide sufficient compensation for the provision of basic service in high-cost areas on a geographically de-averaged basis. Since access, toll, and vertical service revenues are not generated by the local subscriber's purchase of basic service, it would be inappropriate to reduce implicitly the calculated amount of sufficient universal service support by those revenues. As GTE noted in its initial Comments in this proceeding, if the Commission only looks at the costs of supported services but insists on including the revenues from non-supported services, any model will produce inadequate support levels.[49] To fulfill the 1996 Act's goal of removing implicit support mechanisms, the Commission should ensure that there is fully sufficient and explicit universal service support available as described in GTE's Comments.[50] Only if the Commission achieves this objective can it ensure that its policies are consistent with emerging local competition by giving no particular carriers advantages over others.

B. The Commission should not consider incremental costs in computing universal service benchmarks.

The Bureau has requested comment on whether the Commission should exclude from the revenue benchmark estimates of the incremental costs associated with the

(...Continued)
Order) (rel. May 8, 1997).

[49] Comments of GTE, CC Docket Nos. 96-45, 97-160 at 8 (filed Aug. 8, 1997).

[50] Comments of GTE, CC Docket Nos. 96-45, 97-160 at 2 (filed May 15, 1998).

provision of services that are not supported by universal service but which contribute to the revenue benchmark.[51] Rather than assuming a continuation of rates that do not reflect costs, the Commission should encourage states to rebalance rates towards cost-based levels. While excluding the incremental costs associated with access, toll and vertical services from the federal benchmark is better than including *all* revenues from these non-supported services, it would not fix the fundamental problem of mismatched costs and revenues because the incremental costs of these services are generally quite small compared to the rates that state commissions have historically approved for these services.

[51] Public Notice at 9.

VII. CONCLUSION

As demonstrated above, there are numerous difficulties in attempting to develop a cost proxy model that mimics the costs faced by carriers in providing local exchange service, particularly to high-cost areas. Therefore, GTE urges the Commission to develop an auction mechanism for allocating universal service funding. Until such a mechanism is implemented, the Commission should use a BCPM-based model with carrier-specific inputs by state.

Respectfully submitted,

GTE SERVICE CORPORATION and its affiliated domestic telephone operating and wireless companies

By: ______________________

Jeffrey S. Linder
Suzanne Yelen
WILEY, REIN & FIELDING
1776 K Street, N.W.
Washington, D.C. 20006
(202) 429-7000

Its Attorneys

Gail L. Polivy
GTE Service Corporation
1850 M Street, N.W.
Suite 1200
Washington, D.C. 20036
(202) 463-5214

John F. Raposa
GTE Service Corporation
600 Hidden Ridge, HQE03527
Irving, Texas 75038
(972) 718-6969

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EXHIBIT 1

Explanation of HAI Model's Use of Geocoded Data

Despite the HAI Model proponents' claims that the Model uses geocoded data to determine customer location, a detailed examination of the Model shows that it actually makes little use of geocoding and is in fact relying on the same flawed clustering mechanism as previous versions of the Model. The National Economic Research Association study below demonstrates that despite the significant resources used in order to incorporate geocoded data into the HAI Model, these data have little effect on the Model's results.

*   *   *

Analysis of HAI Model Use of Geocoded Data

by National Economic Research Associations, Inc. (NERA)

According to the HAI Model's ("HM 5.0") documentation, "the HM 5.0 input data locate customers much more precisely. These data determine the actual precise locations of as many customers as possible through latitude and longitude geo-coding of their addresses."[1] Furthermore, the documentation claims that "because HM 5.0's approach identifies the actual locations (accurate to within 50 feet) of most telephone customers, it produces the most sophisticated demographic data set of its type."[2]

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[1] HAI Model Documentation, Release 5.0, HAI Consulting Inc., Boulder, Colorado, at 5 (Dec. 11, 1997).

[2] *Id.* at 23.

A. Description Of HM 5.0's Customer Location Approach

As described in PNR's *Example of Customer Location: Raw Address Files to Clustered Output* and in the *Model Description*, the developers of the HAI Input Database go through a series of steps to determine the distribution architecture for each census block (CB). The following is a brief description of the development of the HAI input database. Due to the closed nature of the database, the following information is based on the documentation only and has not been validated by the authors of this report.

The process commences with Metromail Inc.'s National Consumer Database and Dun & Bradstreet's National Database for residential and business customer location counts, respectively. Centrus Desktop, a commercially available geocoding software application, then compares the customer's street address as it appears in the input file to the address records contained in the USPS ZIP+4 directory and Geographic Data Technology's ("GDT") enhanced street network files. Three scenarios can result from this process: the address is matched to United States Postal Service (USPS) files, the address is matched to USPS files *and* the GDT street network, or the address is not matched at all.

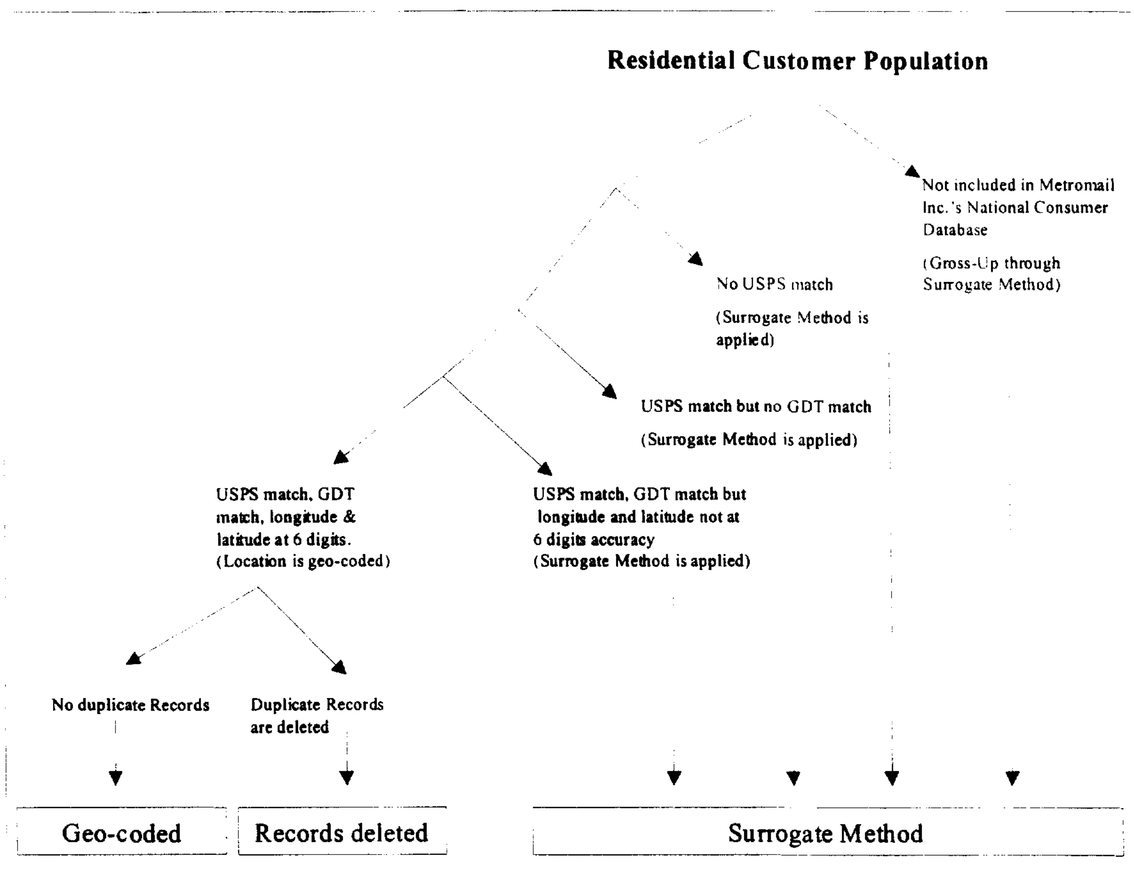
For the first scenario, the ZIP+4 for the customer address is returned. The location information, however, is later discarded in the Model's customer location process and a surrogate method (described below) is used instead. For the second scenario, Centrus Desktop determines a latitude and longitude for the customer's location to the X^{th} decimal place with an accompanying CB designation. The HAI Model materials claim that only geocodes assigned at the 6th decimal place are used in determining customer locations. All other location information is dropped and the surrogate method is used instead. For the last scenario, the surrogate method is always necessary.

Next, the target number of residential locations is determined by first eliminating duplicate records and then comparing total residential counts between the Claritas (an alternative database on U.S. demographics) and Metromail databases. The target number of business locations is supposedly determined by the Dun & Bradstreet National Database, and by simply adding 1 million surrogate points that are "believed to be missing."[3] Surrogate points consist of "unlocated" customers who are assumed to be located uniformly along the periphery of the Census Block. The "pseudo" geocodes implied by these placements are subsequently added to the customer location file. Once all estimated residential and business customers are either geocoded or assigned to a surrogate point, a clustering algorithm essentially reverses the geocoding efforts and aggregates all customers into a set of clusters.

Finally, yet another undefined algorithm, PointCode, is employed that supposedly translates between coordinate systems, computes distances and assigns additional characteristics to cluster records. This process is illustrated in the figure below.

[3] "Example of Customer Location: Raw Address Files to Clustered Outputs," PNR and Associates, at 5.

Figure 1: HM 5.0 Customer Location Process



Only the final product of this process is subsequently included in the Model's input database. It is only at this point that an actual analysis of the Model can be conducted. All preceding steps are claimed to be either intellectual property, proprietary, or confidential.

B. Openness of HAI Database

The Report and Order of the Federal-State Joint Board on Universal Service states that "the cost study or model and all underlying data, formulae, computations, and software associated with the model must be available to all interested parties for review and comment. All underlying data should be verifiable, engineering assumptions reasonable, and outputs plausible."[4] The sponsors of the HAI Model have repeatedly claimed that all aspects of the Model are publicly available and open for inspection by third parties. However, HM 5.0's Input Database does not meet these criteria. First, all databases used in this process are considered intellectual property. By PNR's own estimates, it would cost a third party over $2.6 million in licensing agreements to review all of the databases that went into the customer location approach.[5] This does not include all external models and algorithms that were used in the process of determining the clusters. The sponsors and developers of the Model even claim that certain intermediate results that lead to the final database are confidential and are thus unobtainable by third parties.[6] Moreover, as PNR freely admits, "it may take a new third-party processor 6-12 months to become fluent with the models and produce the first deliverables" and "the third party service bureau may not have the requisite understanding of the component data sources and their limitations to answer technical inquires – or enhance – the model."[7]

Given the closed nature of the Model's input database, it is not possible to conduct a thorough validation study of either the Model's input database or crucial cost

[4] Report and Order, CC Docket No. 96-45, ¶ 250 (rel. May 8, 1997).

[5] "PNR Estimates of the Resources Required to Support the Customer Location Model," PNR and Associates, at 2.

[6] Affidavit of Richard N. Clarke, Public Utilities Commission of the State of Minnesota, PUC Docket Nos. P-999/M-87-909 at 6 (Feb. 4, 1998).

[7] *Id.*

drivers such as the length of the feeder and distribution cable, the density of clusters, etc.

C. Capability of HAI to Use Geocode Data

An analysis of the new Model's input database reveals not only the Model's closed nature, but also its sheer size and complexity. It appears that the input database must be a product of *at least* 12 different databases and 5 independent models or algorithms.[8] The major inputs to the Model are the result of massive pre-processing that can be neither analyzed nor altered in a simple fashion. This large preprocessing requirement becomes even more significant when the fact that the majority of the geocode data is not an output to the process is considered.

The HAI Model's description of geocoding is misleading in that it suggests that the *actual* locations of 95 percent of customers (accurate within 50 feet) were used in the Model. For instance, the developers claim that "in general, geo-coding to the actual point location (*i.e.,* sixth decimal place) is successful 70%-80% of the time."[9] What the documentation fails to point out is what the definition of "in general" means, which in this context is crucial. A close look at the Model's customer location approach, however, reveals that only a portion of actual customer locations is actually geocoded and that none of this information is used to determine cost of providing service.

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[8] The PNR clustering program was recently submitted to the FCC. The complexity of the process and the concomitant difficulty in performing independent evaluations is clearly illustrated by the fact that the program consists of 95 pages of code, programmed in C.

[9] "Example of Customer Location: Raw Address Files to Clustered Outputs," PNR and Associates, Inc., at 4.

First, conflicting information exists on the actual address count contained in Metromail Inc.'s National Consumer Database. As of December 5, 1997, Metromail Inc. reported that its database contained 74.4 million named and unnamed address records for the 50 states.[10] Contrasting this figure with the 1996 Bureau of the Census data of 109.8 million households shows that only 67.8 percent of households are actually being *considered* for geocoding. On December 23, 1997, Metromail changed this statement and reported that its database contained not 74.4 million but 98.2 million address records.[11] This would imply that only 89.4 percent of households are *considered* for geocoding. In Metromail's marketing brochure for the National Consumer Database, the company claims that the database consists of 103 million people, *i.e.*, 95 percent of all U.S. households. It is unclear how many records Metromail's database actually contains.[12] What is clear however, is that the address list that is first even *considered* for geocoding is incomplete. Moreover, the PNR documentation on geocoding states that the Metromail database includes duplicate records. Thus, the actual count is likely even lower.

Second, not all addresses can be successfully geocoded. Regardless of the level of accuracy, there is on average only a 60 percent match rate for successful

[10] *Ex Parte* Presentation - Proxy Cost Models, by Bell South, Sprint and U.S. West, CC-Docket No. 96-45 at 2 (Dec. 11, 1997, Jan. 9, 1998).

[11] *Ex Parte* Presentation - Proxy Cost Models, by AT&T, CC Docket No. 96-45 at 3 (Dec. 23, 1997).

[12] The authors of this paper have contacted Metromail Inc. directly to obtain a quote on the number of addresses contained in the database but did not get a response in time to be included in this paper.

geocoding. Generally, GDT-enhanced data can have match rates of up to 97 percent in highly urban areas.[13] In rural areas, however, these figures drop to roughly 50 percent. This is mainly due to the fact that some rural regions have not yet developed an E911 system. Rural areas also have a much lower "hit rate" because of the predominance of rural routes and post office boxes on such lists. The low hit rate in rural areas is particularly problematic for universal service fund purposes, where the goal is to identify high cost areas.

Third, as stated in the Model documentation, HM 5.0 is only using location information that can be geocoded to the 6th digit. This further reduces the total number of locations that are actually geocoded. Based on PNR's own examples, it appears that roughly between 60 percent and 80 percent of all "geocodable" locations can be geocoded to the 6th digit.[14]

Based on the information above, and even assuming PNR achieved a 100 percent success rate in geocoding, the Model actually geocodes a range of merely 45 percent to 76 percent of all customer locations.[15] When the other concerns discussed

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[13] These figures are based on NERA's best knowledge and experience with geocoding. However, NERA does not claim that this is the actual success rate that was achieved in the geocoding efforts by PNR and Associates, Inc. Although these figures have been requested from the Hatfield sponsors in a discovery request, they were not received in time to be included in this paper.

[14] Example of Customer Location: Raw Address Files to Clustered Outputs," PNR and Associates, at 4.

[15] Low: 0.75*1.0*0.6 = 45%, High: 0.95*1.0*0.8=76%.

above are included, this range could drop to approximately 20 percent.[16] In a recent ex-parte presentation to the Commission, the Model sponsors have admitted to their limited success of geocoding and have reported that merely an average of 65 percent of *all* customers in Nebraska could actually be geocoded.[17] The specific figures for GTE Nebraska's territory are still unknown.

Furthermore, the Model sponsors claim that their geocoding exercise is "accurate within 50 feet."[18] This statement is unsupported. Even the most sophisticated geocoding software uses address ranges to determine actual customer location. Addresses may be mapped onto the right road, but in rural areas will be no closer than within about 160 feet of actual customer location.[19]

While the Model's documentation implies that actual customer locations are being used to model telephone loops, in reality, the clustering algorithm along with the surrogate method essentially reverses these efforts and turns out customer distribution not much different from that in previous versions of the HAI Model. The fact that a significant number of customer locations are not geocoded at all and are assigned to surrogate points makes this "geocoding" exercise even more trivial. That is, customers are spaced evenly over the rectangular areas encompassed by the clusters. In large,

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[16] Low: 0.75*0.5*0.6 = 22.5%.

[17] Letter to Magalie R. Salas from Chris Frentrup, CC Docket Nos. 96-45, 97-160, "Geocode Success Rates" (filed Feb. 3, 1998).

[18] Hatfield Model, Release 5.0, HAI Consulting Inc., Boulder, Colorado, December 11, 1997, page 23.

[19] Written statement by Etak Incorporation, January 20, 1998.

low-density distribution areas, customers are therefore likely to be distributed into areas that are actually unserved, *i.e.*, areas that contain no roads on which to locate dwelling units and business establishments. Thus, geocoding, as used in the HAI Model, requires significant effort and expense with little, if any, increase in accuracy.

EXHIBIT 2

GTE Economic Depreciation Input Parameters

USOA Account	Account Description	GTE Life	Salvage Percent
2212	Motor vehicles	8	10
2113	Aircraft	5	50
2114	Special purpose vehicles	10	0
2115	Garage work equipment	10	0
2116	Other work equipment	10	0
2121	Buildings	30	0
2122	Furniture	10	0
21231	Office support equipment	10	0
21232	Company communications equipment	10	0
2124	General purpose computers	5	0
2212	Digital electronic switching	10	0
2220	Operator systems	10	0
2231	Radio systems	10	0
2232	Circuit equipment	8	0
2351	Public telephone terminal equipment	7	0
2362	Other terminal equipment	5	0
2411	Poles	25	-50
24211	Aerial cable - metallic	15	-10
24212	Aerial cable - nonmetal	20	-10
24221	Underground cable - metallic	15	-10
24222	Underground cable - nonmetal	20	-10
24231	Buried cable - metallic	15	-10
24232	Buried cable - nonmetal	20	-10
24241	Submarine cable - metallic	15	-10
24242	Submarine cable - nonmetal	20	-10
24251	Deep sea cable - metallic	15	-10
24252	Deep sea cable - nonmetal	20	-10
24261	Intrabuilding cable - metallic	15	-10
24262	Intrabuilding cable - nonmetallic	20	-10
2423	Aerial wire	15	-10
2441	Conduit systems	40	-10

Comparison Economic Lives Used By AT&T and Those Proposed By GTE

	AT&T's Economic Life	GTE's Proposed Economic Life
Digital Switching	9.7	10.0
Digital Circuit Equipment	7.2	8.0
Copper Cable		
Aerial	3.4	15.0
Underground	9.0	15.0
Buried	15.0	15.0
Fiber Cable		
Aerial	20.0	20.0
Underground	20.0	20.0
Buried	20.0	20.0
Motor Vehicles	6.6	8.0
Work Equipment	6.7 - 8.2	10.0
Office Equipment	4.7 - 9.3	10.0
Furniture	5.6	10.0

A Comparison of Economic Lives Used By GTE and RBOCs

	Copper Cable	Digital Switching	Circuit Equipment	Fiber Cable
GTE	15	10	8	20
Pacific Bell	14	10	8	20
U. S. West	15-20	10	10	20
Ameritech	15	7	7	15
Bell South	12-14	10	9	20
Bell Atlantic	14-19	12	9-11	20-25
NYNEX	15-17	12	8	20
SBC	18	11	7	20

EXHIBIT 3

Analysis of the HAI Cost Model Inputs

Derived from Data Collected From Contractors

Surveyed by the Cost Model Developers and

Referred to as the Fassett Materials

Prepared by Network Engineering Consulting, Inc.

On Behalf of GTE

June 1, 1998

INTRODUCTION

On March 19, 1997, Dean Fassett, a Hatfield engineering team member, testified in Washington State (WUTC Docket Nos. UT-960369,-70,-71) that he retained the materials, including spreadsheets, vendor price quotations, notes, e-mails, etc., that the Hatfield engineering team relied upon in establishing the engineering assumptions and related default inputs used in the Model. Mr. Fassett also testified that these materials were compiled during the engineering team's survey of various vendors' prices for providing certain components of the loop, and stated that the engineering team used the solicited information to generate, when possible, an average price for loop components to be used as the default inputs in HM 3.1.[1] The materials described by Mr. Fassett have been produced by AT&T in non-confidential form in many state proceedings in which AT&T has been a party, including a recent Alabama USF proceeding (Docket # 25980) Accordingly, GTE is relying upon the non-confidential documentation produced by AT&T in state proceedings.

Based upon both the descriptions contained in the Inputs Portfolio, and deposition statements made by Mr. Fassett, GTE expected to review source material that would support the final default inputs or assumptions built into the model. What GTE actually discovered, however, was something quite different.

GTE's review of the Fassett material shows that many of the default inputs and assumptions contained in the Hatfield (now referred to as HAI) Model are not supported by the source material that the engineering team allegedly "relied" upon in establishing such inputs and assumptions. Specifically, the Fassett material shows that:

- the Hatfield (HAI) engineering team systematically ignored source data which reflected costs and prices that were higher than the values actually used in the Model;
- certain source documentation that contained the lowest costs and prices were often afforded significantly greater weight than any of the "higher" values; and

[1] Deposition of Dean Fassett, Washington Utilities and Transportation Commission Docket Nos. 960369, -70, -71, March 19, 1997, Tr. at 46.

- data from different sources is combined in a manner that violates standard bidding and engineering practices.

The Fassett material shows that the HAI input values are not, as the Model's proponents claim, based upon empirical survey data. Rather, they appear to be based upon a number of arbitrary and questionable value judgments by the HAI engineering team that actually conflict with its own empirical data. One memorandum contained in the recently produced documentation is particularly telling. On January 19, 1997, the HAI engineering team leader, Mr. John C. Donovan, wrote a memorandum to his team members in response to questions of the FCC Joint Board Members, whom he considered "uninformed." Mr. Donovan told the engineering team to simply "make up some default numbers," because "we could always change them before publishing the Model."[2] Based upon the review of the Fassett materials, the default inputs actually used in the HAI Model were indeed "made up," but never changed.

The Washington Utilities and Transportation Commission in their recent order dated April 16, 1998 reached a conclusion similar to GTE's where they state "We find that the outside plant data collected from the vendors by the Hatfield engineering team do not provide sufficient validation for the opinion of these experts."[3]

For illustrative purposes, GTE will present here how the practices described above resulted in the HAI Model using artificially low, unsupported default values for: (a) buried drop wire placement costs; (b) aerial drop placement costs; (c) drop wire distances; (d) pole investment [material and labor costs]; and (e) manhole investment [material and labor costs].

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[2] See Fassett material document number Fasset 188.

[3] Docket Nos. UT-960369, UT-960370, and UT-960371 dated April 16, 1998 at 96.